



Legal advancement of nuclear energy in Nigeria: A myth or a reality?

Sharon Tolulope James, Ralph Mong Nwoke, Aimuaosa Enadeghe

¹ Lecturer, Nigerian Law School Lagos Campus, Lagos, Nigeria

² Managing Partner Df Legal, Nigeria

³ Babcock University, Nigeria

Abstract

The world is at a crossroads. The world population is increasing exponentially, giving rise to high demand for electricity. At the same time, the world is facing the devastating impact of climate change. It has become absolutely imperative to implement climate change solutions while providing electricity to meet the increasing demand of the population and the advancement in technology. Nigeria, as a third-world country, is particularly beleaguered by these issues. Though endowed with countless renewable and non-renewable sources of energy, limitations in various sectors of the economy prevent optimum electricity generation. The Nigerian power sector experiences many broad challenges related to electricity policy enforcement, regulatory uncertainty, gas supply, transmission system constraints, and significant power sector planning shortfalls^[1]. These issues have greatly impeded the provision of constant electricity and have kept the sector from reaching commercial viability. Nuclear energy is a preferred solution to both problems, but it is not without its own challenges. This work seeks to examine nuclear energy, how it is generated, as well as the possibilities it offers in both electrical and non-electrical applications. It studies the advantages nuclear energy offers nations as well as the challenges it brings. This work also recognises the Nigerian government's attempts to introduce nuclear energy in Nigeria, the issues affecting its adoption and identifies the presence of a legal framework and policies regulating nuclear energy in Nigeria. It proffers recommendations for the successful adoption of nuclear energy in Nigeria.

Keywords: legal advancement, nuclear, energy and Nigeria

Introduction

Over time, the average person's perception towards nuclear energy has been hesitation and scepticism. This reaction is not unfounded, as nuclear energy has been associated with radiation leaks, radioactive waste, and the use of bombs and explosives. Nigeria's electricity generation is plagued by epileptic power supply, the recurrent crashing of the national grid and inadequate electricity generation to meet the increasing demand. Like other countries, Nigeria is also profoundly affected by climate change. It has become imperative that countries of the world look to sources of electricity other than fossil fuels and begin to diversify their energy portfolio to meet the increasing demand as well as the looming threat of the consequences of climate change. Nuclear energy poses solutions to these issues. As a low-carbon source of electricity, it may be the hope for electricity generation and climate change the world, especially third-world countries like Nigeria, needs. The federal government aims to attain universal energy access by 2030 and net zero carbon emissions by 2060. To achieve this, the government launched The Energy Transition Plan (ETP) in 2022, stating that the plan is designed to tackle energy poverty, climate change crises and achieve sustainable development goal seven by 2030^[2]. At the 2021 United Nations Climate Change Conference, President Muhammadu Buhari announced Nigeria's commitment to carbon neutrality by 2060. Since the declaration, the Climate Change Act 2021 has been passed, the Federal Government has wholly approved the ETP, and an Energy Transition Implementation working group (ETWG) led by Vice President Yemi Osinbajo (SAN), consisting of many

vital ministers and assisted by an Energy Transition Office (ETO) has been created^[3]. Nuclear energy presents an invaluable opportunity for Nigeria to diversify its energy portfolio and achieve its goal of net zero emissions by 2060

What is Nuclear Energy?

In simple terms, nuclear energy is a type of energy released from the nucleus, the core of atoms^[4]. It is energy produced in the core of an atom. An atom is the tiniest particle of a chemical element that can exist. It is the smallest unit into which matter can be split without releasing electrically charged particles^[5]. They are tiny particles in matter. An atom is mostly a tiny space consisting of a positively charged nucleus of protons and neutrons surrounded by a cloud of negatively charged electrons^[6]. By virtue of their electric force, these electrons are attracted to any positive charge^[7]. Thus, the electric forces in an atom bind the negatively charged electrons to the positively charged nucleus. The nucleus of an atom holds a vast amount of energy. This energy held in the nucleus is known as nuclear energy^[8].

How is Nuclear Energy Released?

There are two ways energy can be released from the nucleus of an atom: 'fission' and 'fusion'.

Nuclear Fission

Nuclear fission occurs when atoms are split into many parts. It is a reaction that occurs where the nucleus of an atom splits into two or more smaller nuclei while releasing energy^[9]. When a neutron collides with a larger atom, it forces it to

excite and split into smaller atoms ^[10]. These smaller atoms are also called fission products ^[11]. While this is happening, additional neutrons are also released that can instigate a chain reaction. Uranium and plutonium are most often used for fission reactions in nuclear power reactors because they are easy to initiate and control ^[12].

The nucleus of a uranium or plutonium atom will split into two lighter nuclei of roughly equal mass ^[13]. This process may occur spontaneously, with electromagnetic radiation in the form of gamma rays, or may be induced by the excitation of the nucleus with a variety of particles (e.g., neutrons, protons, deuterons, or alpha particles) ^[14].

Nuclear Fusion

As the word implies, nuclear fusion occurs when two atoms merge to form a bigger atom ^[15]. In the reaction, two light nuclei fuse to become one heavy nucleus, thus releasing energy because the mass of the single nucleus formed is less than the mass of the original nuclei ^[16]. The matter is not preserved because some of the mass of the fusing nuclei is converted to energy ^[17]. It takes place with elements with low atomic numbers, such as hydrogen ^[18]. The massive potential of nuclear fusion was first exploited in thermonuclear weapons, also known as hydrogen bombs, developed in the years following World War 2 ^[19]. The potential for the peaceful applications of nuclear fusion is wide, especially because of the limitless supply of fusion fuel on earth ^[20]. Fusion reactions between light elements can release energy because binding energy, which is a major feature of nuclear matter, can be released by fusion ^[21]. Binding energy is the amount of energy needed to detach a particle from a system of particles or to disperse all the particles of the system ^[22].

Uses of Nuclear Energy

Nuclear energy has great potential for the advancement and development of countries, and it has several uses. Some of these uses shall be discussed below:

- 1. Electricity:** Electricity generation is one of the most common uses of nuclear energy. Electricity is generated by nuclear energy in a nuclear power plant when atoms are split into two in a reactor. The energy generated heats water that is then used to spin turbines.
- 2. Space Exploration:** The independence and durability of nuclear energy makes it significantly much better than any other power source currently used in space travel ^[23] because it has the durability to withstand the extreme conditions of outer space ^[24]. Nuclear energy could be provided using various methods, such as the use of reactors, nuclear heaters, and generators ^[25].
- 3. Nuclear Weapons:** Nuclear energy can be used to produce weapons such as the atomic bomb. Through the use of both nuclear fission and fusion, these bombs create a powerful explosion that can destroy a large area within seconds, possibly killing thousands and leaving survivors with toxic levels of radiation ^[26].
- 4. Medicine:** Some of the byproducts that are created during nuclear fission in reactors are necessary for areas of medicine ^[27]. The radioisotopes produced in nuclear reactors are employed for medical applications ^[28]. For example, cobalt-60 is used by hospitals to sanitise

equipment like implants, catheters, and scalpels, along with complex medical devices and other technology ^[29]. It is also used in medical radiotherapy for cancer treatment and medical imaging ^[30]. Positron emission tomography (PET) scans use a special dye with radioactive tracers ^[31].

- 5. Food and Agriculture:** Nuclear energy can be used in the production of food and to make agricultural practices safer and more effective. Nuclear applications in agriculture rely on the use of isotopes and radiation techniques to combat pests and diseases, increase crop production, protect land and water resources, ensure food safety and authenticity, and increase livestock production ^[32].
- 6. Desalination of Seawater:** Potable water can be produced through the process of desalination, using reverse osmosis technology to separate water molecules from seawater ^[33]. Desalination of seawater can assist in meeting the increasing need for drinkable water while easing water shortages in many arid or semi-arid coastal areas ^[34]. Desalination plants need energy in the form of heat for purification and need electrical/mechanical energy to drive pumps for the pressurisation of seawater across membranes to separate salt from saline waters ^[35]. Currently, most of this energy is obtained from fossil fuels, but nuclear desalination is a low-carbon alternative that uses the heat and electricity from a nuclear reactor ^[36]. Desalination techniques can be combined with various nuclear power plants to generate water and electricity simultaneously.

Advantages of Nuclear Energy

- 1. Low Carbon Footprint:** It is one of the world's lowest carbon energy sources, with one of the smallest carbon footprints. The Nuclear Energy Institute has stated that nuclear energy production prevents 528 million metric tons of carbon dioxide from being released into the atmosphere annually ^[37]. Throughout its life-cycle, nuclear energy produces about the same amount of carbon dioxide-equivalent emissions per unit of electricity as wind and one-third of the emissions per unit of electricity when compared with solar ^[38]. Because nuclear power is reliable and can be used on a large scale, it can directly substitute fossil fuel plants, preventing the combustion of fossil fuels for electricity generation ^[39]. The use of nuclear energy today avoids emissions roughly equal to removing one-third of all cars from the world's roads ^[40].
- 2. Low Operating Costs:** Though building power plants may be expensive, they have low operating costs and energy produced is relatively cheap to produce. Nuclear power is cost-competitive with other forms of electricity generation, except where there is direct access to low-cost fossil fuels ^[41]. The operating costs may be calculated on a lifetime basis, and it is lower than almost all fossil fuel competitors with a very low risk of cost inflation ^[42]. Nuclear power plants may operate for 60 years or longer, and once a nuclear plant has been constructed, the production cost of electricity is low and predictably stable ^[43].

3. **Wide Application Range:** The possibilities of the application of nuclear power range from electricity generation to non-electric uses such as space exploration, desalination of seawater, nuclear weapons, and medical technology, to mention a few.
4. **High Energy Density:** Nuclear energy's incredible efficiency and powerful nature are derived from uranium's high energy density ^[44]. Uranium may be converted into dust and then compressed into uranium pellets needed for operating the nuclear reactor. Uranium pellets are a highly energy-dense and efficient fuel source that is packed into fuel rods to generate nuclear energy ^[45]. One uranium pellet, which is the size of the tip of a man's little finger, produces as much energy as 1 ton of coal, 560 litres of oil or 480 cubic meters of natural gas ^[46]. It is estimated that the amount of energy produced in nuclear fission is about ten million times greater than the amount released when burning fossil fuels ^[47].
5. **Reliability:** It is a reliable power source because it can be generated at any time throughout the day and produces energy nonstop. It is the only large-scale power source that can be tapped in even the most extreme weather conditions all through the year ^[48]. It has roughly supplied a fifth of America's power each year since 1990 ^[49]. Nuclear power plants operated at full capacity more than 92% of the time in 2021 in America, thus making it the most reliable energy source in America ^[50]. That is about 1.7 times more reliable than natural gas (54%) and coal (49%) plants and roughly 2.5 to 3.5 times more reliable than wind (34%) and solar (25%) plants ^[51].

Disadvantages of Nuclear Energy

1. **Creation of Hazardous Waste:** A primary environmental concern related to nuclear power is the creation of radioactive wastes such as uranium mill tailings, spent (used) reactor fuel, and other radioactive wastes ^[52]. These materials can remain radioactive and dangerous to human health for thousands of years ^[63] and with no long-term storage facility, this could pose a problem and cause significant damage to surrounding areas.
2. **Non-renewable Fuel:** The fuel used in nuclear reactors, uranium, is finite. Unlike air or the sun, it is non-renewable. If there is an increase in uranium mining, it will lead to the depletion of available uranium sources. Experts believe that there is about 200 years' worth of uranium available, assuming nuclear energy production stays at the same rate ^[54]. But, if there is an increased reliance on nuclear power in the future, the supply of uranium will deplete faster, which may cause problems in the years ahead ^[55].
3. **High Water Consumption:** Nuclear power plants are water intensive. A large amount of water is needed to cool the heat generated and produce steam. With an increase in dependence on nuclear energy, there will be a resulting increase in the water needed for nuclear power plants. In 2015, the United States consumed 320 billion gallons of water to produce nuclear power,

which is more water than what is required for coal processing ^[56]. With the looming threat of climate change and water scarcity, such high water consumption might not be sustainable.

4. **Thermal pollution:** While nuclear plants do not discharge sulfur dioxide into the atmosphere, they produce another kind of pollution: Radioactive discharges and the thermal pollution of bodies of water which are tapped to cool the condenser system ^[57]. Nuclear power plants cause thermal pollution. This is because most nuclear power plants are located on the water to obtain water used to produce steam. This process changes the temperature of the water and affects its chemical balance, thus making it inhabitable for aquatic life.
5. **Uranium Mining:** Although nuclear power plants release zero carbon emissions, nuclear power still has a substantial impact on the environment, mainly through mining and water discharge ^[58]. The uranium used to produce nuclear energy has to be mined. Mining of any kind harms the surrounding area. Uranium mining, in particular, is known for releasing arsenic and radon. This has had a negative impact on the health of those living around uranium mines ^[59].
6. **Radiation Leaks:** Radiation leak caused by a nuclear meltdown has been seen to have devastating effects. In the event of a nuclear meltdown, harmful radiation can leak, which can cause adverse effects on the environment and human health. A meltdown at a nuclear plant can have a catastrophic impact on the surrounding areas, as seen from events like the Fukushima disaster, Chernobyl, and Three Mile Island in Pennsylvania. In Chernobyl, Ukraine, in 1986, an accident at a nuclear power station resulted in a serious escape of radioactive material leading to the deaths of an estimated 60,000 people and over 2 million people struggling with health problems.

Nuclear Energy in Nigeria

Nuclear energy technology was introduced in Nigeria in 1968 when Nigeria signed the Nuclear Non-Proliferation Treaty. Shortly before that, in 1964, the Federal Radiation Protection Service was established ^[60]. The Nigerian Atomic Energy Commission (NAEC) was established in 1976 to provide a legal framework for the research of nuclear energy and to ensure the development of nuclear energy for peaceful purposes. Research centres were established at Obafemi Awolowo University, Ile-Ife and Ahmadu Bello University, Zaria, to fast-track the country's nuclear energy program and conduct research and training on nuclear science ^[61]. The Nuclear Technology Centre (SHESTCO) at Sheda, Abuja was established in 1988 as the third training and research centre in nuclear technology. The NAEC in 2010 also established the Centre for Nuclear Energy Studies, University of Port Harcourt, and the Centre for Nuclear Energy Training & Research, University of Maiduguri.

The Nigerian Nuclear Regulatory Authority (NNRA) was created in 1995. It was mandated to regulate all nuclear activities in the country, and in 2004, the Inter-Ministerial Committee on Energy Resources was inaugurated.

In 2020, according to the United States Energy Information Administration, Nigeria generated about 28 billion kilowatt-hours and had a generating capacity of about 12 million kilowatts with no nuclear power generation ^[62]. Energy generation had been dropping steadily from 31 billion kilowatt-hours in 2018 to 29 billion kilowatt-hours in 2019 ^[63].

The Director General of the Nigerian Nuclear Regulatory Authority (NNRA), Yau Idris, stated at the Nigerian International Energy Summit in March 2022, that Nigeria is trying to deliver 4000 megawatts (4 million kilowatts) of electricity through nuclear power, which should increase Nigeria's power generating capacity to 13,000 megawatts (13 million kilowatts) ^[64].

In a bid to embrace nuclear energy, Nigeria partnered with Russia and the Russian State Nuclear Corporation Rosatom. The Russian-Nigerian Joint Coordination Committee (JCC) on National Atomic Energy was established in 2009 with the aim of establishing nuclear plants in Nigeria by the year 2020 ^[65]. This goal was not met, but both countries have recently entered into a new agreement to, among other things, develop the Geregu nuclear power plant at Geregu, Kogi State, and Itu nuclear power plant at Akwa Ibom ^[66].

The development of nuclear power in Nigeria has been met with much scepticism. While there is much advocacy for it, many energy experts believe that Nigeria should focus on expanding the national grid to efficiently transmit and distribute the 13,000 Megawatts capacity available in the country.

Dr Sam Amadi, the former Chairman of the Nigerian Electricity Regulatory Commission (NERC) stated that while it was good to look into the future and find options that would increase the energy mix, a nuclear power plant was not the way to go at the moment. He said that while there are numerous advantages, there are three concerns he had about its feasibility: the environmental risk regarding the level of culture and professionalism in project management in Nigeria, the transmission and distribution capacity of the electrical market and the global politics of nuclear energy which makes it vulnerable ^[67]. Another expert, Ifeoma Malo, speaking at Nextier Power dialogue in Abuja in 2022, also stated that issues like safety, environmental hazards and ongoing insecurity in Nigeria make it a dangerous option for the country ^[68].

Factors Affecting the Development of Nuclear Energy in Nigeria

- 1. Public opinion:** Public opinion of nuclear energy has been significantly affected by the knowledge of its harmful effects. Its destructive effects can be seen in the disasters that occurred at Fukushima, Chernobyl and Three Mile Island, as well as in the use of nuclear weapons. These have given nuclear energy a poor reputation and greatly affected the public's opinion.
- 2. Inadequate infrastructure and maintenance culture:** Nigeria has a poor maintenance culture and infrastructure investment. Public utilities are poorly maintained, and funds reserved for infrastructure development are often siphoned. Poor infrastructure has resulted in an inadequate transportation system. This would significantly affect the movement of materials for the construction of nuclear plants

- 3. Environmental Impact:** Oil spillage and pipeline vandalism led to great unrest and insecurity in the Niger Delta. The environmental impact of nuclear energy, such as thermal pollution and radiation leaks, could result in even more devastating effects on the environment and lead to greater unrest among the people affected.

- 4. Financing:** Nigeria seeks to implement an energy transition plan to diversify its energy mix and reach net zero emissions by 2060. In order to do this, the government is seeking funding of about \$1.9 trillion. Building nuclear power plants is a very cost-intensive undertaking. The inability to fund such a project affects Nigeria's development of nuclear energy.

- 5. Research and technical capacity:** Nigeria lacks the technical capacity and personnel knowledge to operate a nuclear facility. Thus, any development in this area would rely heavily on countries with know-how, such as Russia or the United States.

Legal Framework of Nuclear Energy in Nigeria

Currently, the legislative framework in Nigeria regulating atomic energy and all matters relating to the peaceful use of atomic energy is the Nigeria Atomic Energy Commission (NAEC) Act 1976 and the Nuclear Safety and Radiation Protection Act (NSRP) 1995. The NSRP established the Nigerian Nuclear Regulatory Authority (NNRA) as the regulatory body. Nigeria is working on revising the existing legislation to establish a comprehensive legal framework for the development and regulation of the country's planned nuclear power programme ^[69]. This is important to precisely identify the roles of the different regulatory bodies and prevent inconsistencies between the draft bills. In this vein, the Nuclear Safety, Security and Safeguards Bill was introduced to repeal the Nuclear Safety and Radiation Protection Act but reestablish the Nigerian Nuclear Regulatory Authority.

The Nigerian Atomic Energy Commission Act establishes the Nigeria Atomic Energy Commission as a body corporate. The Commission is charged with responsibility for the promotion of the development of atomic energy and all matters relating to the peaceful uses of atomic energy ^[70]. It is the duty of the Commission to ensure that no nuclear damage results from: (a) anything on any premises occupied by the Commission; or (b) anything which is in the course of carriage by or on behalf of the Commission for or from such premises; or (c) any waste discharged on or from such premises ^[71]. The President may make Regulations for, among other things: (a) securing the safe carriage of any nuclear fuel, radioactive products or waste; (b) regulating and controlling the disposal of waste on or from any premises on which there is a nuclear installation, or (c) securing the maintenance of efficient systems for detecting and recording the presence and intensity of any ionising radiation from anything discharged on or from such premises or from anything in the course of carriage to or from such premises ^[72].

The NNRA is saddled with the responsibility for nuclear safety, security and radiological protection regulation in Nigeria ^[73]. It is the duty of the NNRA to, among other things,

- regulate the possession and application of radioactive substances and devices emitting ionising radiation;
- ensure protection of life, health, property and the environment from the harmful effects of ionising radiation;
- regulate the safe promotion of nuclear research and development, and the application of nuclear energy for peaceful purposes;
- advise the Federal Government of Nigeria on nuclear security, safety and radiation protection matters ^[74].

Other relevant national laws include

- The National Energy Commission of Nigeria Act (No. 62), 1979

This Act empowers the commission to prepare, develop or supply periodic master plans for the balanced and coordinated development of energy as well as analyse and publish information relating to the field of energy from all sources and liaise with all International Organisations in energy matters such as the International Atomic energy Agency, World Energy Conference and other Organisations ^[75].

- The Nigerian Minerals and Mining Act, 2007

This Act regulates all aspects of exploration and exploitation of all solid minerals in Nigeria and vests the entire ownership and control of all mineral resources in Nigeria, in the Federal Government of Nigeria ^[76].

- The Environmental Impact Assessment (EIA) Act

This Act ensures that before a decision is taken which may likely affect the environment, such impact is established and taken into consideration ^[77]. The Act prevents private and public projects from being carried out without such prior consideration for environmental impact. Thus, concerning nuclear energy, any mining or other activity related to nuclear energy production that ought to be carried out must be subject to the environmental impact assessment.

- The Harmful Wastes (Special Criminal Provisions etc.) Act

The Harmful Waste (Special Criminal Provisions etc.) Act prohibits the carrying, depositing and dumping of harmful waste on any land, territorial waters and matters relating thereto ^[78]

- National Agency for Science and Engineering Infrastructure Act 1992

The agency established by the Act is empowered to establish in Nigeria the practice of an open, consistent, equitable, accountable and corporate research management system, commission technical feasibility studies and produce plans for the establishment of science and engineering infrastructure development complexes.

Nigeria has also signed and ratified legally binding international instruments necessary for the implementation of the effective nuclear security regime. Some of these instruments include

- Convention on Physical Protection of Nuclear Material (CPPNM);
- Amendment to the Convention on Physical Protection of Nuclear Material; and
- International Convention for the Suppression of Acts of Nuclear Terrorism.

Nigeria is also a party to the Comprehensive Safeguards Agreement (CSA) and ratified the Protocol Additional to the CSA. Nigeria also signed and ratified the Treaty of Pelindaba on the African Nuclear-Weapon-Free zone.

There are also legally non-binding international instruments that Nigeria has adopted. Nigeria adopted the IAEA Code of Conduct on the Safety and Security of Radioactive Sources to develop the Nigerian Safety and Security of Radioactive Sources Regulations in 2006. Based on the IAEA Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities, Nigeria drafted the Nigerian Regulations on the Physical Protection of Nuclear Material and Nuclear Facilities in 2015.

Recommendations

Russia's State Atomic Energy Corporation, Rosatom, has said that Nigeria should add nuclear energy to its energy mix to harness abundant benefits and improve its current power situation, stating that Russia was in a similar situation with Nigeria until it approached nuclear energy ^[79]. It is evident that nuclear energy can play a significant role in improving power generation in Nigeria. For it to be successful, however, a proper system to support its integration must be in place. This article proffers the following recommendations

1. It is of utmost importance that a legal framework consistent with international best practices is in place. Nigeria is a party to international treaties regulating nuclear power use. These treaties should be upheld and abided. Regulatory bodies should be run efficiently and ensure compliance of all governmental and non-governmental bodies with national and international legal requirements. Though numerous laws relating to energy are already in existence, it is recommended that a singular nuclear energy law that meets international safety practices and covers the field is passed.
2. Laws passed should adequately provide for sanctions that will be levied against persons who attempt to vandalise nuclear reactors, steal or unlawfully transport radioactive materials as well as unlawfully use such radioactive materials.
3. Nigeria can take a page out of the book of countries like the United States of America, France and Russia, who have actively integrated nuclear powder into their energy mix. Observing the systems and policies they adopted and the laws they implemented would give Nigeria sufficient guidance on properly integrating nuclear energy into its energy mix, the necessary laws to implement and mistakes to avoid.
4. The government should provide for and support research at different levels in the use of nuclear energy. Nuclear energy should be added to the curriculum and taught at both secondary and tertiary levels. Research facilities should also be set up, and existing research facilities should be adequately funded to conduct research on Nigeria's particular terrain and how nuclear energy can meet the country's specific needs.
5. Regulatory bodies such as the NNRA and the Nigeria Atomic Energy Commission should regularly sensitise the public on nuclear energy, its advantages, radioactivity and radioactive substances through various forms of mass media. This would help to educate the masses on the positive uses of nuclear energy and enable them to take precautionary measures in dealing with radioactive substances.
6. Nuclear energy is attractive because it has proven to be less harmful to the environment than other energy sources. However, there is still the danger of thermal

pollution, radiation leaks and the creation of hazardous waste. As the government seeks to delve into electricity generation through nuclear energy, it should ensure that the environmental impact is mitigated. Nuclear energy production and use must meet all international safety standards.

- The Nigerian government should take active steps to ensure the active implementation of all its laws. As it creates a better legislative framework that adequately provides for nuclear energy, existing laws and new laws should be properly implemented and enforced.

Conclusion

In order to combat the damaging effects of climate change, Nigeria has to take active steps in all sectors to ensure environmental protection. Low-carbon energy sources must be introduced and developed. This is necessary not only for climate change action but for electrical and technological advancement. No nation can develop in the 21st century without adequate power supply and electrical advancement. Thus, nuclear energy must be seriously developed. Its development in Nigeria, however cannot be successful without adequate legal mechanisms in place to ensure its proper use. Given the dangers of improper or negative use of nuclear energy, it must be heavily regulated and protected by laws. While numerous laws are already in place, it is imperative that the government creates a primary reference law on nuclear energy.

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